

## **TARGET: Science & Engineering Program**

### **2009 FACT SHEET**

#### **General Information About Fermilab**

The Fermi National Accelerator Laboratory (popularly known as "Fermilab") is operated by Fermi Research Alliance, Inc. (FRA), LLC. A consortium of more than 90 major universities in the United States and Canada are involved in the research at the Laboratory.

FRA holds a contract with the U.S. Department of Energy, under which funds for the operation of the Laboratory are obtained. An area office of the Department of Energy is located at Fermilab. The Laboratory is located on 6,800 acres about five miles east of Batavia, Illinois. Fermilab is about 30 miles west of Chicago, north of the Illinois East-West Tollway (Interstate 88, the Farnsworth/Kirk exit). The headquarters of the Laboratory are located in Wilson Hall, a 16-story structure near the main entrance to the Laboratory on Kirk Road, opposite Pine Street, Batavia. The suburbs of Aurora, Batavia, St. Charles, Geneva, West Chicago, Wheaton, Warrenville, and Naperville are within 20 minutes driving time.

The research done at Fermilab is known as "high energy physics" or "Particle Physics". Its purpose is to explore the basic structure of matter. The mission of the Laboratory is carried out primarily through experiments. Teams of scientists from various universities submit proposals for work to be done using the accelerator. Several proposals are chosen each year, and Fermilab personnel assist these teams in constructing and modifying the equipment that is used in the experiments. The success of the experiments is determined by analyzing the data that is gathered and tabulating results. Often scientific teams from other nations come to Fermilab to participate in the research. Previous generations of this basic research have revealed the structure of the atom, then the nucleus of the atom.

Learning more about the behavior of particles has become possible through the use of particle accelerators of higher and higher energies. Fermilab's machine is a synchrotron which accelerates protons to 8 - 1000 GeV [giga (billion) electron volts]. The Fermilab machine has no "product", nor does it produce electrical power, as does a nuclear reactor. It is a scientific instrument (in a sense, a giant microscope) that permits study of atomic nuclei, searching always for the basic building blocks of nature.

#### **Program Information**

The **TARGET: Science and Engineering Program** is primarily directed at underrepresented minority groups (Black, Hispanic, and Native American) with strong interest in the disciplines of mathematics and the sciences. The goals of the program are to identify and encourage scientific and engineering research ability among sophomore through senior high school students of underrepresented minority groups, and to increase their representation in the sciences and engineering. The program will provide participants with a summer experience of academic enrichment and the practical application of science and engineering principles. Students will be counseled and participate in tours and lectures intended to further stimulate interest in mathematics, engineering and the sciences.

## Duration of Program

The program incorporates both classroom and work experiences five days per week for six weeks. Held at the Fermilab campus in Batavia, the program **begins** on **Monday, June 22<sup>nd</sup>** and **ends** on **Friday, July 31<sup>st</sup>, 2009**, unless otherwise notified. Students are **required** to participate for the *entire duration* of the six (6) week program. *Students who have made commitments that will **overlap** with this program **should not** complete an application.* **There can be no exceptions!**

## Students' Day

The students' day will be divided into two segments, as follows:

- a) **Morning Hours** - during this period, students will report to their assigned areas to work alongside Fermilab personnel. It should be understood, that because of students' level of schooling and the fact that they are less than 18 years of age, certain work areas within the Laboratory will be inappropriate for assignment. As a result of these factors, some job assignments and tasks may not be as intricate as others. All supervisors involved in the TARGET program are asked to explain to the student the importance of their job assignment and how it fits into the overall science and Laboratory administrative tasks.
- b) **Afternoon Hours** - During these hours, students will receive instructional and laboratory time under the direction of a team of experienced and specialized teachers. Students will be transferred from the Laboratory to Naperville Central High School by bus at our expense. This phase of the program will run from 1:00 to 4:00 pm each day. These sessions are designed to allow students to work on individual and group projects. This aspect of the program allows the student to be both engineer and scientist by giving the student a problem that has to be solved. At the end of the six-week program students are expected to complete an oral presentation. This presentation will describe the science methodology, results, and recommendations for the project.

## Qualifications

- ♦ Participants must have successfully completed Algebra in the ninth grade and be in the process of taking Geometry in the tenth grade.
- ♦ To apply, students must have a 3.0/4.0 grade point average or above.
- ♦ Students must secure evaluations from their **math** and **science** teachers at school.
- ♦ References from a program administrator, e.g., Early Identification Program and the Upward Bound Program will also be accepted.

## Transportation

Bus service is provided to Fermilab from a convenient and safe CTA location, namely the Congress Line at Des Plaines Avenue in Maywood (along the Eisenhower Expressway). Details are arranged after program participants are selected.

## Stipend

Each student is paid \$7.75 an hour for 20 hours of work per week. In addition, each student receives a weekly stipend of \$40 for the completion of classroom hours.

## Application Procedure

*Applicants, please follow directions below:*

### Mail Completed Application Packet to:

Mrs. Sandra Charles, Equal Opportunity & Diversity Office  
Fermi National Accelerator Laboratory  
Post Office Box 500 - MS 117 Batavia, IL 60510

### 2009 Application Packet

- ☐ 2009 Application
- ☐ Personal Statement
- ☐ Transcript
- ☐ 2 Student Evaluation Forms

<b><i>Application Deadline: <u>Monday, April 6, 2009</u></i></b>
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